## Space Weather Forecast

Issued on Sunday, 02 January 2022 at 12:50 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: Slight chance of G1/Minor storm on 02 January. Slight chance of moderate solar activity throughout.**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Solar activity has been low, with two common class flares observed from the region close to the northwest limb. This region is barely discernible on true colour imagery, but has been responsible for much of the solar activity through the last 24 hours. The largest region in the southwest quadrant has been relatively inactive, but still poses a significant flare risk. One other region in the southern hemisphere is weak and does not currently present a significant flare risk. No Earth-directed CMEs (coronal mass ejections) have been observed on available imagery.

**Solar Wind / Geomagnetic Activity:** Solar winds have been at elevated levels through the last 24 hours, as the Earth connected with a coronal hole fast wind. Total interplanetary field strength started moderate but weakened, with the north-south component also weak. Geomagnetic activity has been Quiet to Unsettled (Kp 1-3).

**Energetic Particles / Solar Radiation:** No solar radiation storms were observed.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Mainly low solar activity is forecast, with a slight chance of moderate solar activity, due mainly to the two significant regions in the western hemisphere.

**Solar Wind / Geomagnetic Activity:** Solar wind speed are expected to remain elevated through 02 January, before declining to background levels during 03 and 04 January. Geomagnetic activity is expected to be mainly Unsettled through 02 and 03 January, with a chance of Active intervals and a slight chance of G1/Minor storms. Mainly Quiet to Unsettled conditions are then expected through 04 and 05 January.

**Energetic Particles / Solar Radiation:** No solar radiation storms are expected.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Met Office

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**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 10 | 10 | 1 | 1 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 20 | 10 | 10 | 5 |
| Very Active | R3 to R5 X | No | 3 | 1 | 1 | 1 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 5 | 5 | 5 | 1 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |
| * S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$) | | | | | | |

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